

REMARKS

Claim rejections - 35 U.S.C. §102(e)

Claims 17-18 were rejected under 35 U.S.C. §102(e) as being anticipated by Kim. Kim teaches a signal magnitude estimator **30** that functions as follows:

- (1) I and Q are input into absolute value calculators **31-1** and **31-2** to get |I| and |Q|. (Column 3, lines 49-52 and FIG. 3)
- (2) A comparator **34** compares |I| and |Q|, and provides an output **35** indicating which of the two values is larger (or smaller). (Column 3, lines 54-57 and FIG. 3)
- (3) A signal magnitude calculator **36** receives the absolute values |I| and |Q| and, according to the output **35** of the comparator **34**, adds the larger absolute value with ½ of the smaller absolute value. (Column 3, lines 58-63 and FIG. 3)

Therefore, the output **37** of the signal magnitude estimator **30** is either:

$$\text{a. } |I| + \frac{1}{2}|Q| \quad \text{if } |I| > |Q|$$

or

$$\text{b. } |Q| + \frac{1}{2}|I| \quad \text{if } |Q| > |I|$$

It is essential to Kim's circuit that a comparator be used to determine whether |I| or |Q| is larger before adding them together. (Column 4, lines 19-23) Otherwise, the signal magnitude estimator **30** is incorrect.

The present invention teaches a power approximation circuit that functions as follows:

- (1) Absolute values are calculated for $n1_i$ and $n2_i$, resulting in $|n1_i|$ and $|n2_i|$ (Page 17, lines 11-22)
- (2) $|n1_i|$ and $|n2_i|$ are added together by an adder **236** to get:
 $|n1_i| + |n2_i|$ (page 17, line 24 and Figure 2)
- (3) Finally, the output of the adder **236** is input to an averaging filter, which performs an expectation function, which in one embodiment is:

$$\sqrt{\tilde{N}_i} = a(|n1_i| + |n2_i|) + (1 - a)\sqrt{\tilde{N}_{i-1}}$$

In distinct contrast to the prior art, the present invention does not use a comparator to determine which of the input values $|n1_i|$ and $|n2_i|$ is greater; nor does it take half of one value before adding it to the other. The values $|n1_i|$ and $|n2_i|$ are simply added (combined) together. This novel feature is recited in claim 17: "A demodulator having a power approximation circuit..., the power approximation circuit generating an approximate power value which indicates an actual power value for the complex signal by combining absolute values of the real and imaginary components and then applying an expectation function to the combined absolute values" (Underlining added). Applicants respectfully draw notice to the fact that no mention is made in claim 17 of *comparing* the absolute values of the real or imaginary components, or of multiplying one of the values by $\frac{1}{2}$.

The power approximation circuit of the present invention is further distinct from the prior art because it performs an expectation function on the sum $|n1_i| + |n2_i|$. However, the prior art only adds the larger absolute value to half of the smaller absolute value. It does not teach an expectation function. This novel feature is also recited in claim 17: "A demodulator having a power approximation circuit..., the power approximation circuit generating an approximate power value which indicates an actual power value for the complex signal by combining absolute values of the real and imaginary components and then applying an expectation function to the combined absolute values." (Underlining added).

For the reasons mentioned above, claim 17 is believed to be patently distinct over Kim. Therefore, claim 17 is believed to be allowable. Dependent claim 18 is believed to be allowable based on the allowability of claim 17. The rejection to claim 18 is believed to be overcome. Dependent claims 19-21 are also believed to be allowable based on the allowability of claim 17. The objections to claims 18-21 are believed to be overcome. No new matter has been introduced with this amendment.

CONCLUSION

If the Examiner has any further questions or would like to discuss this application in more detail, he is invited to call the Applicants' agent at the telephone number given below. The Applicants respectfully suggest that the claims presently in the application are distinct over the prior art and that the application is now in condition for allowance. Accordingly, the Applicants solicit favorable action.

Respectfully submitted,
William J. Hillery, et al.



Judy L. Shie
Patent Reg. No. 50,305

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Agilent Technologies
Intellectual Properties Administration
Legal Department, M/S DL-429
815 SW 14th Street
Loveland, CO 80537
(408) 345-8920